important ores, retail prices of cut gems, values of metals and minerals; then follows an admirable glossary in which, however, some of the fundamental terms, such as crystal, mineral and polarize, are not defined with scientific accuracy.

The tables which follow the index are summaries of the descriptions, characters in parallel columns and minerals in order of description.

The book is of convenient size for the pocket and embodies much easily accessible and useful information. In spite, however, of the fact that it is, as explicitly stated, designed for the determination of minerals, its value in the absence of all systematic schemes would seem to be rather to refresh the user's memory as to the characters of known or suspected minerals, than as a guide to the determination of unrecognized material.

A. J. MOSES

*Analysis of Mixed Paints, Color Pigments and Varnishes.* By C. D. HOLLEY, Ph.D., and E. F. LADD, B.S., Professors of Chemistry, North Dakota Agricultural College. New York, John Wiley & Sons. Pp. 235.

This book presents in a more accessible and considerably enlarged form the results of the work done in connection with the enforcement of the North Dakota paint law. It gives the latest and best methods for the analysis of the substances mentioned in its title, and, what is still more valuable, the composition of these articles as found on the American market.

The method for the analysis of linseed oil, however, is incomplete, no mention being made of the process for detecting fish oil in it with certainty.

Incidentally it furnishes a striking commentary on the honesty and integrity of the American paint and oil trade. The authors' investigations showed "white leads" which contained no lead carbonate and but five per cent. of lead sulphate; other pigments were found which were branded in a manner calculated to mislead. Not content with this sort of fraud, water, in some cases to the extent of twenty-five per cent., was mixed with the paints and these put up in packages which were 10 to 13 per cent. short in weight or measure! The authors have done a real service in showing up such conditions.

The work is one of the best contributions to the literature of these subjects that have appeared, dealing not only with analyses, but also with specifications, and the application and testing of paints on a large scale, and should be in the library of every one having to do with the subjects treated.

A. H. GILL

## SPECIAL ARTICLES

### SOME CONDITIONS AFFECTING VOLCANIC ERUPTIONS

IN the study of such natural phenomena as are difficult to investigate by reason of inaccessibility, or of danger to the observer, it is natural and often advantageous to consider some analogous, but less obscure phenomenon and, from a careful study of this, to deduce the laws which govern the former. A case in point is that of a volcano in eruption which, by its very nature, prohibits close inspection, but with which a certain degree of parallelism is found in the action of geysers. More than thirty years ago Fuchs called attention to the similarity existing between the two, comparing the column of water in the geyser tube to the lava in the interior of a volcano and stating that geysers "ont encore une grande importance en ce sens qu'ils nous permettent de nous faire une idée claire des phénomènes qui produisent les éruptions volcaniques." (K. Fuchs, "Les volcans et les tremblements de terre.") In the light of modern volcanological science, however, this generalization of the term "éruptions volcaniques" will be found too sweeping, for it is clear that the action of a trachytic volcano, whose highly silicious magma is at best in a viscous state, can with difficulty be considered as analogous to that of a geyser where fluidity is the most evident characteristic. A comparative study of the two phenomena should, therefore, be prefaced by the explicit statement that the volcano in consideration is of the basaltic type, with lava which is liquid at the temperature of action, and con-